Energy costs may explode in switch to nuclear power

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After painstakingly analyzing the costs of U.S. nuclear power plants built decades ago, energy experts caution that a resurrection of nuclear power could bring along some financial risk and surprisingly high electricity costs.
Researchers reporting in the most recent edition of the journal Environmental Science & Technology found that construction costs varied by as much as 500 percent before the last U.S. nuclear power station was built almost 30 years ago.

"There is no other (energy) technology we're looking at where the range in cost is a factor of five," said Dan Kammen, professor of energy and resources and of public policy at the University of California, Berkeley. "It means that if the nuclear industry doesn't manage itself much better than in the past, we are likely to still get this large range of costs."

The clean, carbon-free energy from splitting atoms has drawn backing among influential lawmakers and environmentalists as a way to ease consumption of fossil fuels and global warming.

But the industry and its financial backers could be vulnerable to the same cost volatility, scientists warned, especially if utilities begin trying half a dozen new kinds of reactors cooled by metals or gases rather than water.

In recent weeks, federal regulators have given the nod to new reactor sites in Illinois and Mississippi, and firms are readying applications for construction and operation of up to 33 new U.S. reactors, mostly in the Southeast and Midwest. Industry officials say soaring plant costs in the 1980s are all but irrelevant now.

"I don't think it's a good prologue," said Peter Saba, a former Energy Department official. "Past experience is not going to be a good gauge, because people are building them differently."

Ordinarily, an industry learns by producing and with learning, technology gets less expensive. But researchers at UC-Berkeley, Georgetown University and Lawrence Berkeley National Laboratory found that "the case of nuclear power has been seen largely as an exception that reflects the idiosyncrasies of the regulatory environment as public opposition grew, regulations were tightened and construction times increased."

Particularly after the loss of reactor coolant at Three Mile Island in 1979, tougher new safety requirements came into play, and utilities had to upgrade their construction plans, increasing construction costs at a time when interest rates were high.

By the end of the decade, costs inflated so rapidly that the industry no longer could afford to build plants.

Saba, whose father was a nuclear engineer, said part of the problem was that utilities wanted every nuclear power station to be unique.

"They were designing them as they were building them," he said.

Starting in 1992, Congress and the Nuclear Regulatory Commission also have reworked the rules for licensing new plants, allowing nuclear firms to get the latest three basic Generation III+ reactor designs approved in advance. Saba said the advanced Generation IV reactors that concern the energy scientists at Berkeley and Georgetown are at least a decade away.

The rules also permit utilities to seek early site approvals, mostly for sites adjoining existing reactors. Utilities then can apply for a joint construction and operating license, rather than work through two costly and combative licensing proceedings. To these changes, Congress has added billions of dollars in federal liability protections and loan guarantees.

"I don't have any doubt that companies are going to do some pretty hard number-crunching before they proceed," said Steve Kerekes, a spokesman for the industry's trade association, the Nuclear Energy Institute.

"It never hurts to look at what the history was in that period. I'm not sure what that tells you because the rules have changed."

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